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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/634,312	08/08/2000	Mikio Kurihara	JP9-1999-0161US1(8728-410	5044

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Frank Chau Esq.
F Chau & Associates LLP
1900 Hempstead Turnpike Suite 501
East Meadow, NY 11554

EXAMINER	
DUONG, THOI V	

ART UNIT	PAPER NUMBER
2871	

DATE MAILED: 07/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/634,312	KURIHARA ET AL.	
	Examiner	Art Unit	
	Thoi V Duong	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *03* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 July 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This office action is in response to the Amendment, Paper No. 9, filed July 28, 2003. Accordingly, claims 1, 5, 10, 12 and 13 were amended. Currently, claims 1-14 are pending in this application.

Response to Arguments

2. Applicant's arguments with respect to claims 1-14 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1, 2 and 5-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujimori et al. (USPN 5,852,487) in view of Kishimoto et al. (USPN 6,339,462 B1).

Re claims 1, 2 and 10-12, as shown in Fig. 1, Fujimori et al. discloses a touch sensor type liquid crystal display comprising:

a liquid crystal display panel 200a having first and second substrates 1, 2 arranged oppositely to each other by a specified gap;

a plurality of columnar gap controlling spacers 11 formed of columnar shape for restricting a width of the gap and a spacer movement in a planar direction, wherein said gap controlling spacer is brought into surface-contact with one selected from the first

and second substrates, the gap therebetween being restricted by the gap controlling spacer (col. 8, lines 58-64);

a touch sensor 200b added to the liquid crystal display panel including fixed and movable electrode plates 2 and 3; and

a grid 14 arranged between the fixed and movable electrode plates,

wherein arranging positions of said gap controlling spacer and said grid are coincident with each other;

wherein said gap controlling spacers are regularly arranged in a planar direction of the liquid crystal display panel (col. 8, lines 62-64) and arranged in a black matrix region of the liquid crystal display panel (col. 20, lines 30-38); and

wherein said movable and fixed electrode plates are made of plastic films (col. 8, lines 28-57).

Re claims 5-9, Fujimori et al. further discloses that the touch sensor type liquid crystal display is a color display (col. 20, lines 38-41) wherein the first and second substrates of the liquid crystal display panel are arranged oppositely to each other by interpolating a liquid crystal layer, said movable electrode plate serves as a touch sensor arranged oppositely to the second substrate by a specified gap, and a conductive film 5a is provided to serve as a touch sensor formed on a surface of the second substrate which faces the movable electrode plate (col. 8, lines 8-13).

Fujimori et al. discloses a touch sensor type liquid crystal display that is basically the same as that recited in claims 1, 2 and 5-12 except that each of the spacers is not formed by two members with one of the two members contacting the first substrate and

the other of the two members contacting the second substrate and the two members contacting each other at a point intermediate between the first and second substrates, the cross-section of each spacer parallel to the plane of a substrate at said intermediate point being no larger in area than either of the substrate contact surfaces.

As shown in Fig. 10A-10I, Kishimoto et al. discloses a liquid crystal display device 100 comprising spacers formed by two members, 917 and 920, with one of the two members 917 contacting a first substrate 908 as color filter substrate (col. 1, lines 42-46) and the other of the two members 920 contacting a second substrate 902 and the two members contacting each other at a point intermediate between the first and second substrates. The cross-section of each spacer 917 and 920 parallel to the plane of a substrate at said intermediate point is equal (or no larger) in area than either of the substrate contact surfaces. Kishimoto et al. discloses that, with the formation of the spacers, liquid crystal molecules are axially symmetrically aligned and, thus observers experience less variation in contrast (col. 1, lines 28-34).

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the touch sensor type liquid crystal display of Fujimori et al. with the teaching of Kishimoto et al. by having the gap controlling spacers formed by two members with one of the two members contacting the first substrate and the other of the two members contacting the second substrate and the two members contacting each other at a point intermediate between the first and second substrates, the cross-section of each spacer parallel to the plane of a substrate at said intermediate

point being no larger in area than either of the substrate contact surfaces so as to realize a wide viewing angle characteristics (col. 1, lines 34-35).

5. Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yanawana et al. (JP 2000-227596) in view of Kishimoto et al. (USPN 6,339,462 B1).

As shown in Figs. 11B and 12, Yanawana et al. discloses a liquid crystal display comprising:

a liquid crystal display panel having first and second substrates 1A and 1B arranged oppositely to each other by a specified gap; and

gap controlling spacers 10, each of which restricts a width of the gap and a spacer movement in a planar direction,

wherein arranged densities of said gap controlling spacers are not uniform; and

wherein an arranged density of said gap controlling spacers is high in a center of the liquid crystal display panel as shown in Figs. 24A and 24B (see Detail Description, paragraphs 198-202).

Yanawana et al. discloses a touch sensor type liquid crystal display that is basically the same as that recited in claims 13 and 14 except that each of the spacers are not formed by two members with one of the two members contacting the first substrate and the other of the two members contacting the second substrate and the two members contacting each other at a point intermediate between the first and second substrates, the cross-section of each spacer parallel to the plane of a substrate

at said intermediate point being no larger in area than either of the substrate contact surfaces.

As shown in Fig. 10A-10I, Kishimoto et al. discloses a liquid crystal display device 100 comprising spacers formed by two members, 917 and 920, with one of the two members 917 contacting a first substrate 908 as color filter substrate (col. 1, lines 42-46) and the other of the two members 920 contacting a second substrate 902 and the two members contacting each other at a point intermediate between the first and second substrates. The cross-section of each spacer 917 and 920 parallel to the plane of a substrate at said intermediate point is equal (or no larger) in area than either of the substrate contact surfaces. Kishimoto et al. discloses that, with the formation of the spacers, liquid crystal molecules are axially symmetrically aligned and, thus observers experience less variation in contrast (col. 1, lines 28-34).

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the touch sensor type liquid crystal display of Yanawana et al. with the teaching of Kishimoto et al. by having the gap controlling spacers formed by two members with one of the two members contacting the first substrate and the other of the two members contacting the second substrate and the two members contacting each other at a point intermediate between the first and second substrates, the cross-section of each spacer parallel to the plane of a substrate at said intermediate point being no larger in area than either of the substrate contact surfaces so as to realize a wide viewing angle characteristics (col. 1, lines 34-35).

6. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fujimori et al. (USPN 5,852,487) in view of Kishimoto et al. (USPN 6,339,462 B1) as applied to claims 1, 2 and 5-12 above and further in view of Hatano et al. (USPN 6,331,881 B1).

The touch sensor type liquid crystal display of Fujimori et al. as modified in view of Kishimoto et al. above includes all that is recited in claim 3 except for arranging densities of said gap controlling spacers according to the number of times of touching the touch sensor.

As shown in Fig. 3, Hatano discloses a liquid crystal display comprising a plurality of gap controlling spacers (col. 6, lines 56-61) having different densities in regions B1-B4 to suppress change in display state which may caused by an externally applied pressure even if the plate is soft (col. 11, lines 1-7).

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the touch sensor type liquid crystal display of Fujimoni with the teaching of Hatano by arranging densities of the gap controlling spacers according to the number of times of touching the touch sensor to obtain a high self-holding property and suppress change in display state for improving viewing angle (col. 11, lines 1-10).

7. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fujimori et al. in view of Kishimoto et al. (USPN 6,339,462 B1) as applied to claims 1, 2 and 5-12 above and further in view of Yanawana et al. (JP 2000-227596).

The touch sensor type liquid crystal display of Fujimori et al. as modified in view of Kishimoto et al. above includes all that is recited in claim 4 except for a high density of said gap controlling spacers in a center of the liquid crystal display panel.

As shown in Figs. 11A, 24A and 24B, Yanawana et al. discloses a liquid crystal display wherein gap controlling spacers 10 are regularly arranged in a planar direction of the liquid crystal display panel and an arranged density of said gap controlling spacers is high in a center of the liquid crystal display panel (see Detailed Description, paragraphs 198-202).

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the touch sensor type liquid crystal display of Fujimori with the teaching of Yanagawa et al. by arranging a high density of said gap controlling spacers in a center of the liquid crystal display panel for securing the cell gap in the viewing area (paragraph 200).

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thoi V. Duong whose telephone number is (571) 272-2292. The examiner can normally be reached on Monday-Friday from 8:30 am to 4:30 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim, can be reached at (571) 272-2293.

Thoi Duong TD
07/05/2004

TARIFUR R. CHOWDHURY
PRIMARY EXAMINER